

NOTICE OF REVISION (NOR)			1. DATE (YYMMDD) 93-11-19	Form Approved OMB No. 0704-0188
This revision described below has been authorized for the document listed.				
Public reporting burden for this collection is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. PLEASE DO NOT RETURN YOUR COMPLETED FORM TO EITHER OF THESE ADDRESSES. RETURN COMPLETED FORM TO THE GOVERNMENT ISSUING CONTRACTING OFFICER FOR THE CONTRACT/ PROCURING ACTIVITY NUMBER LISTED IN ITEM 2 OF THIS FORM.			2. PROCURING ACTIVITY NO.	
			3. DODAAC	
4. ORIGINATOR	b. ADDRESS (Street, City, State, Zip Code) Defense Electronics Supply Center 1507 Wilmington Pike Dayton, OH 45444-5270	5. CAGE CODE 67268	6. NOR NO. 5962-R024-94	
a. TYPED NAME (First, Middle Initial, Last)		7. CAGE CODE 67268	8. DOCUMENT NO. 5962-88627	
9. TITLE OF DOCUMENT MICROCIRCUIT, DIGITAL, BIPOLAR, ADVANCED SCHOTTKY TTL, 8-BIT BINARY COUNTER, MONOLITHIC SILICON.		10. REVISION LETTER		11. ECP NO.
		a. CURRENT A	b. NEW B	
12. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES All				
13. DESCRIPTION OF REVISION Sheet 1: Revisions ltr column; add "B". Revisions description column; add "Changes in accordance with NOR 5962-R024-94". Revisions date column; add "93-11-19". Revision level block; change from "A" to "B". Rev status of sheets; for sheets 1, 2, and 14 change from "A" to "B". Sheets 4 and 5 add "B". Sheet 2: 1.4 Recommended operating conditions, setup time: PE to CP - - - -, delete "7.5 ns" and substitute "9.5 ns". 1.4 Recommended operating conditions, setup time: U/D to CP - - - -, delete "7.5 ns" and substitute "12.5 ns". 1.4 Recommended operating conditions, hold time: Pn to CP - - - -, delete "0 ns" and substitute "1.0 ns". 1.4 Recommended operating conditions, hold time: CET, CEP to CP: - - -, delete "1.0 ns" and substitute "2.0 ns". Revision level block; change from "A" to "B". Sheet 4: Maximum clock frequency, f_{MAX} : subgroups 10 and 11, minimum column add "2". Revision level block; add "B". Sheet 5: add "2/ This parameter is guaranteed, but not tested". Revision level block; add "B". See continuation of NOR on page 2.				
14. THIS SECTION FOR GOVERNMENT USE ONLY				
a. (X one)	X	(1) Existing document supplemented by the NOR may be used in manufacture.		
		(2) Revised document must be received before manufacturer may incorporate this change.		
		(3) Custodian of master document shall make above revision and furnish revised document.		
b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT DESC-ECC		c. TYPED NAME (First, Middle Initial, Last) Monica L. Poelking		
d. TITLE Chief, Custom Microelectronics	e. SIGNATURE Monica L. Poelking		f. DATE SIGNED (YYMMDD) 93-11-19	
15a. ACTIVITY ACCOMPLISHING REVISION DESC-ECC	b. REVISION COMPLETED (Signature) Larry T. Gauder		c. DATE SIGNED (YYMMDD) 93-11-19	

13. DESCRIPTION OF REVISION - CONTINUED

Document No.:	5962-88627
Revision:	B
NOR No.:	5962-R024-94
Sheet:	2 of 2

Sheet 14. add "2/" to 5962-8862701KX and 5962-88627013X.
add "2/ Not available from an approved source".
delete company name and address and substitute the following:
"Phillips Semiconductor
811 E. Arques Avenue
Sunnyvale, CA 94088-3409"
Revision level block; change from "A" to "B".

[illegible]

DESC FORM 193
SEP 87

5962-E1471

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

1. SCOPE

1.1 Scope. This drawing describes device requirements for class B microcircuits in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices".

1.2 Part or Identifying Number (PIN). The complete PIN shall be as shown in the following example:

<u>5962-88627</u>	<u>01</u>	<u>K</u>	<u>X</u>
⋮	⋮	⋮	⋮
_____	_____	_____	_____
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

1.2.1 Device type(s). The device type(s) shall identify the circuit function as follows:

<u>Device type</u>	<u>Generic number</u>	<u>Circuit function</u>
01	54F269	8-bit bidirectional binary counter

1.2.2 Case outline(s). The case outline(s) shall be as designated in appendix C of MIL-M-38510, and as follows:

<u>Outline letter</u>	<u>Case outline</u>
K	F-6 (24-lead, .640" x .420" x .090"), flat package
L	D-9 (24-lead, 1.280" x 0.310" x 0.200"), dual-in-line package
3	C-4 (28-terminal, .460" x .460" x .100"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range	-----	-0.5 V dc minimum to +7.0 V dc maximum
Input voltage range	-----	-0.5 V dc at -18 mA to +7.0 V dc
Storage temperature range	-----	-65° C to +150° C
Maximum power dissipation (P_D) ^{1/}	-----	69 mW
Lead temperature (soldering, 10 seconds)	---	+300° C
Thermal resistance, junction-to-case (Θ_{JC})	--	See MIL-M-38510, appendix C
Junction temperature (T_J)	-----	+175° C

1.4 Recommended operating conditions.

Supply voltage range (V_{CC})	-----	4.5 V dc minimum to 5.5 V dc maximum
Case operating temperature range (T_C)	-----	-55° C to +125° C
Minimum high level input voltage (V_{IH})	-----	2.0 V dc
Maximum low level input voltage (V_{IL})	-----	0.8 V dc
Minimum high or low setup time (t_s):		
P_n to CP	-----	2.5 ns
PE to CP	-----	7.5 ns
CET , CEP to CP	-----	10.5 ns
U/D to CP	-----	7.5 ns
Minimum high or low hold time (t_h):		
P_n to CP	-----	0 ns
PE to CP	-----	0 ns
CET , CEP to CP	-----	1.0 ns
U/D to CP	-----	0 ns
Minimum high or low clock pulse width (t_w)	---	4.0 ns

^{1/} Must withstand the added P_D due to the short circuit test; e.g., I_{OS} .

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2. APPLICABLE DOCUMENTS

2.1 Government specification, standard, and bulletin. Unless otherwise specified, the following specification, standard, and bulletin of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this drawing to the extent specified herein.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification for.

STANDARD

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

BULLETIN

MILITARY

MIL-BUL-103 - List of Standardized Military Drawing (SMD's).

(Copies of the specification, standard, and bulletin required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Order of precedence. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing shall take precedence.

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements shall be in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices" and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

3.2.1 Case outline(s). The case outline(s) shall be in accordance with 1.2.2 herein.

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 1.

3.2.3 Truth table. The truth table shall be as specified on figure 2.

3.2.4 Logic diagram. The logic diagram shall be as specified on figure 3.

3.2.5 Test circuit and switching waveforms. The test circuit and switching waveforms shall be as specified on figure 4.

3.3 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in table I and shall apply over the full case operating temperature range.

3.4 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table I.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55° C ≤ T _C ≤ +125° C unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
High level output voltage	V _{OH}	V _{CC} = 4.5 V, V _{IL} = 0.8 V V _{IH} = 2.0 V, I _{OH} = -1.0 mA	1, 2, 3	2.5		V
Low level output voltage	V _{OL}	V _{CC} = 4.5 V, V _{IL} = 0.8 V V _{IH} = 2.0 V, I _{OL} = 20 mA	1, 2, 3		0.5	V
Input clamp voltage	V _{IC}	V _{CC} = 4.5 V, I _{IN} = -18 mA	1, 2, 3		-1.2	V
High level input current	I _{IH1}	V _{CC} = 5.5 V, V _{IN} = 7.0 V	1, 2, 3		100	μA
	I _{IH2}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	1, 2, 3		20	μA
Low level input current	I _{IL}	V _{CC} = 5.5 V, V _{IN} = 0.5 V	1, 2, 3		-0.6	mA
Short circuit output current	I _{OS}	V _{CC} = 5.5 V, V _{OUT} = 0.0 V <u>1</u> /	1, 2, 3	-60	-150	mA
Supply current	I _{CCH}	V _{CC} = <u>5.5 V</u> PE = <u>CET</u> = <u>CEP</u> = <u>U/D</u> = GND Pn = 4.5 V, CP = <u>/</u> outputs open	1, 2, 3		120	mA
	I _{CCL}	V _{CC} = <u>5.5 V</u> PE = <u>CET</u> = <u>CEP</u> = <u>U/D</u> = GND CP = <u>/</u> outputs open	1, 2, 3		125	mA
Maximum clock frequency	f _{MAX}	V _{CC} = 5.0 V C _L = 50 pF R _L = 500Ω See figures 3 and 4	9	100		MHz
			10, 11	85		
Propagation delay time, CP to Qn (load)	t _{PLH1}		9	3.5	9	ns
			10, 11	3.5	10	
	t _{PHL1}		9	4	8.5	ns
			10, 11	4	9	

See footnote at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C subgroups unless otherwise specified		Group A	Limits		Unit	
					Min	Max		
Propagation delay time, CP to Qn (count)	t _{PLH2}	V _{CC} = 5.0 V C _L = 50 pF R _L = 500Ω See figures 3 and 4	PE = 2.0 V	9	3.5	8.0	ns	
				10, 11	3.5	9.0		
	t _{PHL2}			9	4.5	10.5	ns	
				10, 11	4.5	11.0		
Propagation delay time, CP to TC	t _{PLH3}				9	4.5	9.5	ns
					10, 11	4.5	10.5	
	t _{PHL3}				9	6.0	10.0	ns
					10, 11	5.5	10.5	
Propagation delay time, CET to TC	t _{PLH4}			9	3.5	9.0	ns	
				10, 11	3.5	10.5		
	t _{PHL4}			9	3.0	10.5	ns	
				10, 11	3.0	11.5		
Propagation delay time, U/D to TC	t _{PLH5}			9	3.5	9.5	ns	
				10, 11	3.5	10.0		
	t _{PHL5}			9	4.5	9.5	ns	
				10, 11	4.5	11.0		

1/ Not more than one output should be shorted at a time, and the duration of the short circuit condition should not exceed 1 second.

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Case outlines	K and L	3
Terminal number	Terminal symbol	
1	$\overline{U/D}$	NC
2	Q_0	$\overline{U/D}$
3	Q_1	Q_0
4	Q_2	Q_1
5	Q_3	Q_2
6	Q_4	Q_3
7	GND	Q_4
8	Q_5	NC
9	Q_6	GND
10	Q_7	Q_5
11	\overline{CP}	Q_6
12	\overline{CEP}	Q_7
13	\overline{CET}	\overline{CP}
14	TC	CEP
15	P_7	NC
16	P_6	\overline{CET}
17	P_5	TC
18	P_4	P_7
19	V_{CC}	P_6
20	P_3	P_5
21	P_2	P_4
22	P_1	NC
23	P_0	V_{CC}
24	\overline{PE}	P_3
25	---	P_2
26	---	P_1
27	---	P_0
28	---	\overline{PE}

NC = No connection

FIGURE 1. Terminal connections.

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Pin	Pin description
P ₀ - P ₇	Parallel data inputs
$\overline{\text{PE}}$	Parallel enable input (active LOW)
$\overline{\text{U/D}}$	Up-down count control input
$\overline{\text{CEP}}$	Count enable parallel input (active LOW)
$\overline{\text{CET}}$	Count enable trickle input (active LOW)
CP	Clock input
$\overline{\text{TC}}$	Terminal count output (active LOW)
Q ₀ - Q ₇	Flip-flop outputs

FIGURE 1. Terminal connections - Continued.

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Operating mode	Inputs						Outputs	
	CP	U/D	$\overline{\text{CEP}}$	$\overline{\text{CET}}$	$\overline{\text{PE}}$	$\overline{\text{P}}_n$	Q_n	$\overline{\text{TC}}$
Parallel load	↑	X	X	X	l	l	L	(a)
	↑	X	X	X	l	h	H	(a)
Count up	↑	h	l	l	h	X	Count up	(a)
	↑							
Count down	↑	l	l	l	h	X	Count down	(a)
	↑							
Hold do nothing	↑	X	h	X	h	X	qn	(a)
	↑	X	X	h	h	X	qn	H

H = High voltage level steady state.

h = High voltage level one setup time prior to the low-to-high clock transition.

L = Low voltage level steady state.

l = Low voltage level one setup time prior to the low-to-high clock transition.

X = Irrelevant

q = Lower case letters indicate the state of the referenced output prior to the low-to-high clock transition.

↑ = Low-to-high clock transition.

(a) = The TC is low when CET is low and the counter is at terminal count. Terminal count up is with all Q_n outputs high and terminal count down is with all Q_n outputs low.

FIGURE 2. Truth table.

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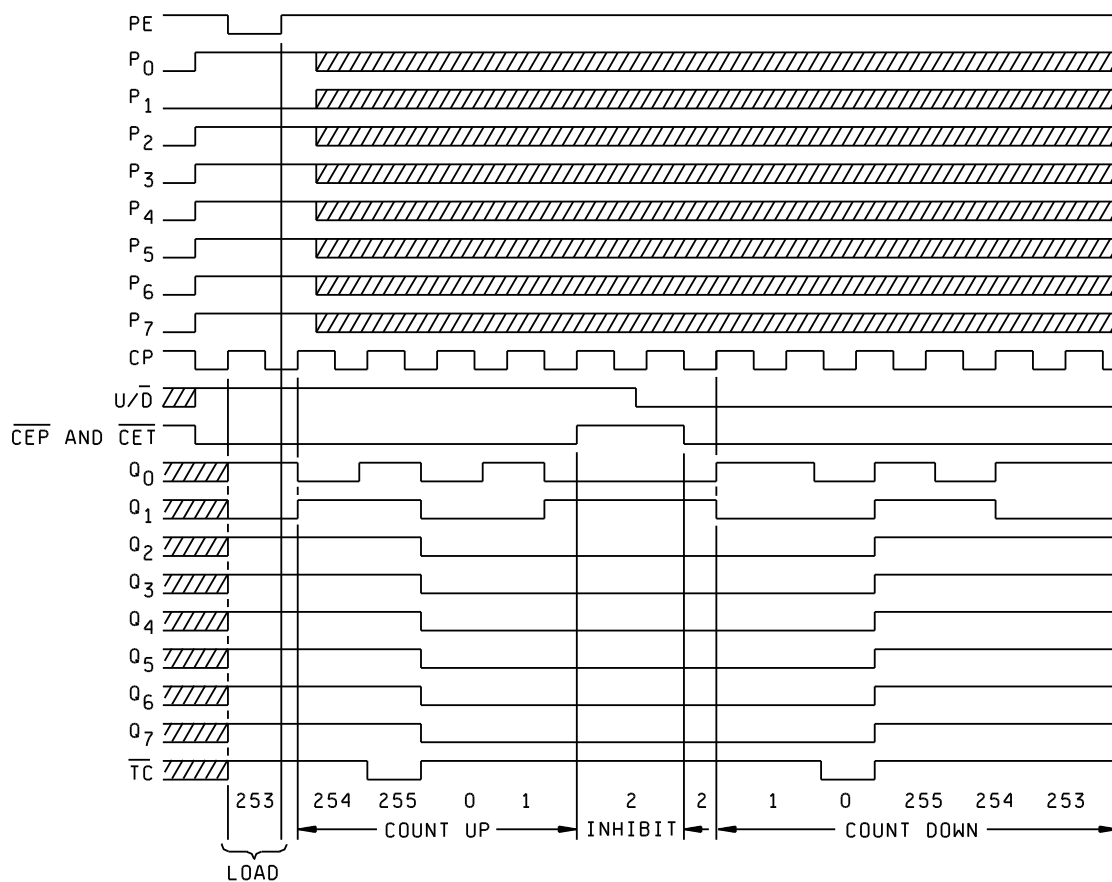


FIGURE 3. Timing diagram.

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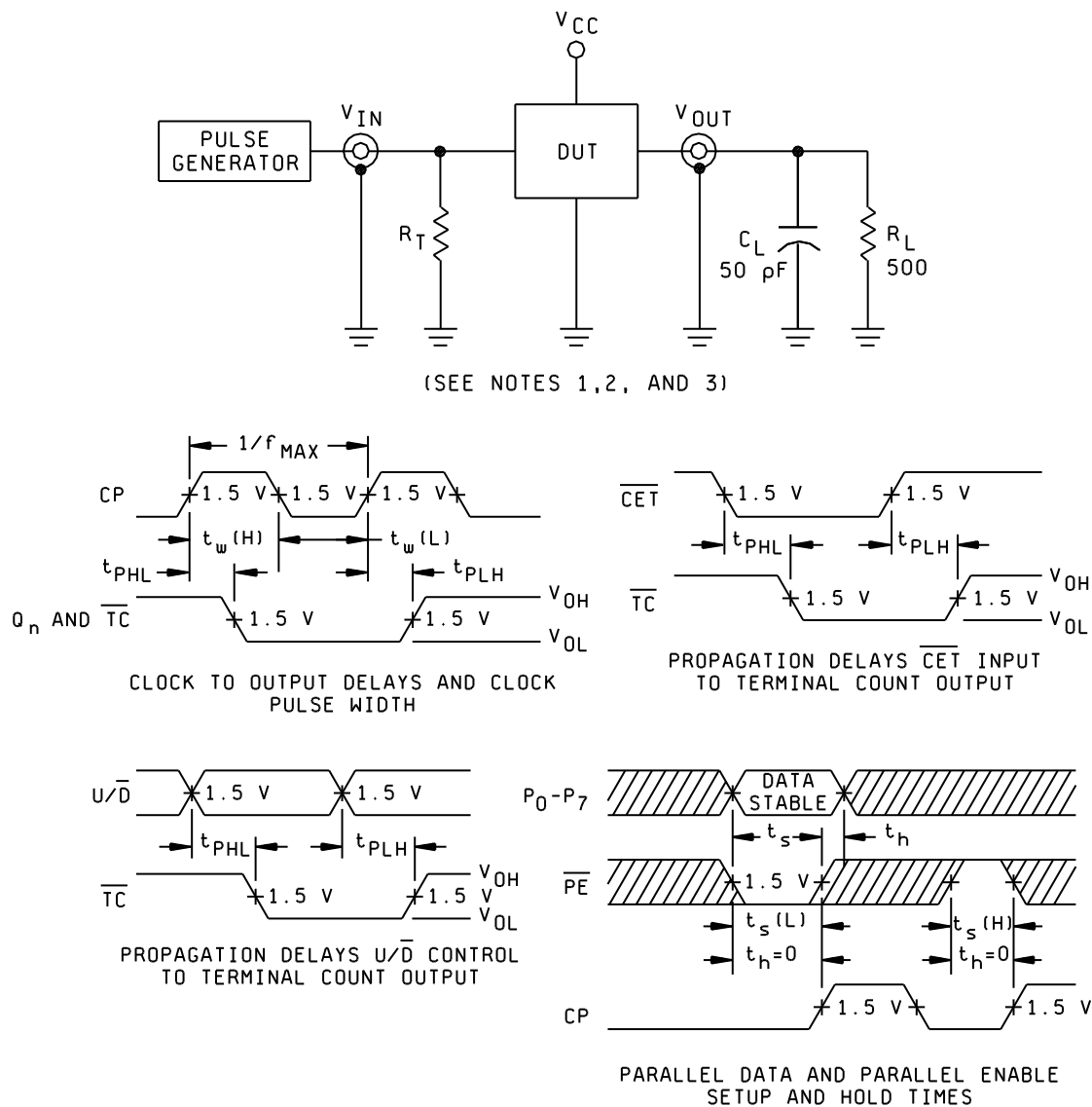


FIGURE 4. Test circuit and switching waveforms.

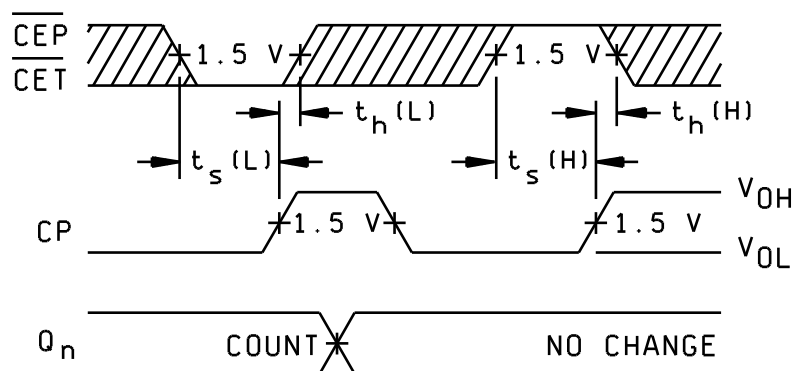
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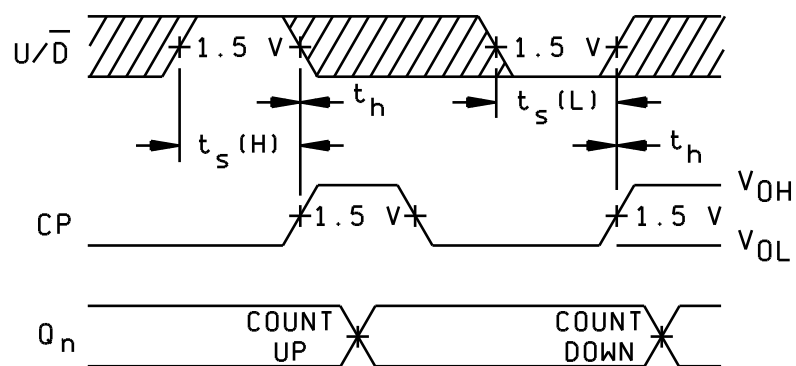
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COUNT ENABLE SETUP AND HOLD TIMES



UP/DOWN CONTROL SETUP AND HOLD TIMES

NOTES:

1. C_L includes probe and jig capacitance.
2. $R_T = Z_{OUT}$ of pulse generators.
3. Input pulse characteristics: PRR = 1 MHz, $t_{TLH} = t_{THL} = 2.5$ ns, duty cycle = 50%.
4. The shaded areas indicate when the input is permitted to change for predictable output performance.

FIGURE 4. Test circuit and switching waveforms - Continued.

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3.5 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked as listed in MIL-BUL-103 (see 6.6 herein).

3.6 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in 6.4. The certificate of compliance submitted to DESC-ECC prior to listing as an approved source of supply shall affirm that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.7 Certificate of conformance. A certificate of conformance as required in MIL-STD-883 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

3.8 Notification of change. Notification of change to DESC-ECC shall be required in accordance with MIL-STD-883 (see 3.1 herein).

3.9 Verification and review. DESC, DESC's agent, and the acquiring activity retain the option to review the manufacturer's facility and applicable required documentation. Offshore documentation shall be made available onshore at the option of the reviewer.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with section 4 of MIL-M-38510 to the extent specified in MIL-STD-883 (see 3.1 herein).

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection. The following additional criteria shall apply:

a. Burn-in test, method 1015 of MIL-STD-883.

(1) Test condition A, D, E, or F using the circuit submitted with the certificate of compliance (see 3.6 herein).

(2) $T_A = +125^{\circ}\text{C}$, minimum.

b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameter tests prior to burn-in are optional at the discretion of the manufacturer.

4.3 Quality conformance inspection. Quality conformance inspection shall be in accordance with method 5005 of MIL-STD-883 including groups A, B, C, and D inspections. The following additional criteria shall apply.

4.3.1 Group A inspection.

a. Tests shall be as specified in table II herein.

b. Subgroups 4, 5, and 6 in table I, method 5005 of MIL-STD-883 shall be omitted.

c. Subgroups 7 and 8 tests shall include verification of the truth table.

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4.3.2 Groups C and D inspections.

- a. End-point electrical parameters shall be as specified in table II herein.
- b. Steady-state life test conditions, method 1005 of MIL-STD-883.
 - (1) Test condition A, D, E, or F using the circuit submitted with the certificate of compliance (see 3.6 herein).
 - (2) $T_A = +125^{\circ}\text{C}$, minimum.
 - (3) Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters (method 5004)	---
Final electrical test parameters (method 5004)	1*, 2, 3, 7, 8 9, 10, 11
Group A test requirements (method 5005)	1, 2, 3, 7, 8 9, 10, 11
Groups C and D end-point electrical parameters (method 5005)	1, 2, 3

* PDA applies to subgroup 1.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for OEM application. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-38510, the device specified herein will be inactivated and will not be used for new design. The QPL-38510 product shall be the preferred item for all applications.

6.2 Replaceability. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.

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6.3 Configuration control of SMD's. All proposed changes to existing SMD's will be coordinated with the users of record for the individual documents. This coordination will be accomplished in accordance with MIL-STD-481 using DD Form 1693, Engineering Change Proposal (Short Form).

6.4 Record of users. Military and industrial users shall inform Defense Electronics Supply Center when a system application requires configuration control and the applicable SMD. DESC will maintain a record of users and this list will be used for coordination and distribution of changes to the drawings. Users of drawings covering microelectronics devices (FSC 5962) should contact DESC-ECC, telephone (513) 296-6022.

6.5 Comments. Comments on this drawing should be directed to DESC-ECC, Dayton, Ohio 45444, or telephone (513) 296-8525.

6.6 Approved source of supply. An approved source of supply is listed in MIL-BUL-103. Additional sources will be added to MIL-BUL-103 as they become available. The vendor listed in MIL-BUL-103 has agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DESC-ECC. The approved source of supply listed below is for information purposes only and is current only to the date of the last action of this document.

Military drawing part number	Vendor CAGE number	Vendor similar part number <u>1/</u>
5962-8862701KX	18324	54F269/BKA
5962-8862701LX	18324	54F269/BLA
5962-88627013X	18324	54F269/B3A

1/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

Vendor CAGE
number

18324

Vendor name
and address

Signetics Corporation
4130 South Market Court
Sacramento, CA 95834

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